USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

Trends in Conservation





21st Century Conservation by California Farmers & Ranchers in conjunction with the USDA's Natural Resources Conservation Service





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NRCS

Helping People Help the Land

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United States Department of Agriculture

NRCS
Natural Resources Conservation Service
California State Office
430 G Street, Room 4164
Davis, CA 95616
(530) 792-5600
(530) 792-5790 (Fax)

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Over the past year I have traveled much of the terrain of this diverse and beautiful State. In my travels I have discovered that although the 21st Century has barely begun, clear trends already appear to be taking shape across California's agricultural landscape. Californians are rightfully proud of this landscape, a rich mix of cropland, rangeland and private forestland that continues to lead the Nation in agricultural bounty. In 2005, California agricultural producers surpassed $34 billion in farm sales. At the same time these lands account for over half of the Golden State's land mass: a land mass that captures its significant portion of raindrops and sunshine; holds unique soils and minerals; and an abundance of fish and wildlife species.

Balancing productivity and sustainability—hand in hand with farmers, ranchers and others—has been our work and our passion at USDA's Natural Resources Conservation Service for over 70 years now. The 21st Century trends I am seeing all have roots in that past but they have sprouted new twists, fed by conditions and urgencies unique to our age.

While seemingly limitless, California's amazing fertility is meeting formidable constraints. Regulations, proliferating to balance the needs and rights of an increasingly complex society, are limiting producers' management options…and also forging unprecedented new coalitions. The wide open western vistas—and their precious water and other resources—are proving distressingly finite. The very air we breathe can no longer be taken for granted. Producers and partners are meeting these challenges with a mixture of technology, marketing, voluntary stewardship and just plain gumption.

This publication offers our look at five key conservation trends. It is far from a complete list, and it is offered from our unique perspective at NRCS in California. I invite you to explore these trends with us as we in the conservation community work with partners to pursue a 21st Century course to sustain and enhance the unique landscape we fondly call California.

Sincerely,

Lincoln E. Burton

LINCOLN E. BURTON
State Conservationist

The Natural Resources Conservation Service provides leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment.

An Equal Opportunity Provider and Employer

Trend One

Regulatory Requirements as Catalysts
to New Assistance, Collaboration, and Partnership

> "Most farmers want to be good stewards. But they need help, because the price we pay for food doesn't cover what we want them to do for the environment."
>
> **Richard E. Rominger**
> *Yolo County Farmer and Rancher*
> *Former USDA Deputy Secretary*

Farming in the 21st Century requires navigating around a maze of regulatory challenges. While each of these laws has roots in important protections for resources and citizens, taken together they have erected substantial roadblocks to conservation progress. Investing hard-earned dollars and waiting for months—or even years—to get local, state, and/or federal approvals to do work intended to benefit the environment, can dampen the zeal of even the most ardent conservation-minded landowner.

There is, however, technical and financial assistance from the Natural Resources Conservation Service (NRCS) to help landowners comply with many of these regulations. And it is an encouraging trend in California conservation that landowners and agencies are finding ways to untangle regulation frustrations that have tied up conservation projects in the past. In the process, unusual allies are finding common ground.

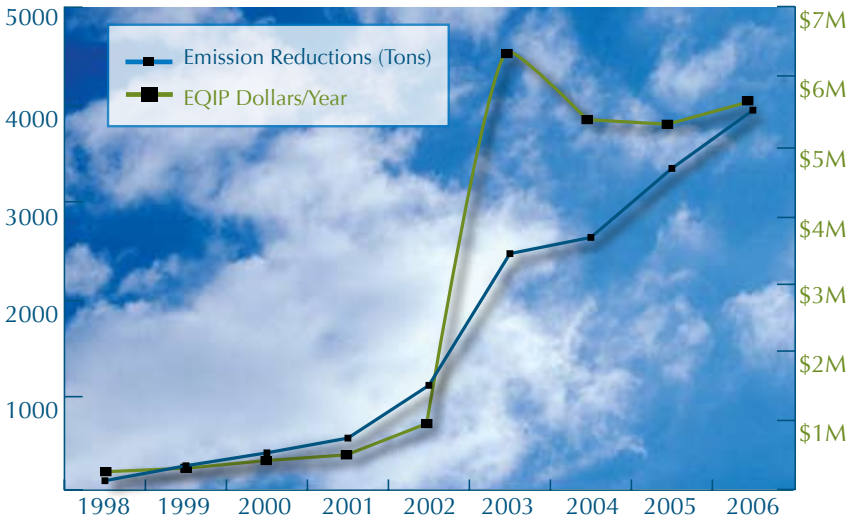
(Above) NRCS employees Brad Hicks (left) and Diana Waller (right) view No Till corn grown by dairy farmer Andrew Zylstra (center). Zylstra utilizes manure as a valuable fertilizer to improve soil quality and increase crop yields, while saving money and protecting water quality.

Grape stakes treated with chromium copper arsenate receive proper disposal.

Air Quality Improvements

California agricultural producers were among the first in the Nation to face stiff air quality regulations, though they are unlikely to be the last. Agriculture—as a major industry in the inland valleys with impaired air quality—is meeting the challenge in a number of ways (see sidebar) and NRCS is helping with technical and financial assistance. Since 1998 NRCS has helped over 3,000 farmers with air quality cost share and assisted another 4,000 producers in writing their air quality management plans. With an investment of $56 million—contributed equally by the agency and producers—NRCS and California farmers have prevented 13,300 tons of emissions from entering the atmosphere.

Air Quality Benefits and NRCS Cost Share Investments



Air quality benefits (measured in emission reductions) have risen steadily as NRCS and producers have invested $56 million in air quality conservation practices since 1998. Meanwhile the costs, per unit gain, are dropping.

Conservation practices that improve air quality:

- *Chipping* – Orchards and vineyards that are removed, and annual prunings from almond and walnut trees, are chipped rather than burned *(photo below)*.

- *Conservation Tillage* – Crop residue stays on the soil surface after harvesting; Dust- and emission-producing tillage operations are reduced.
- *Diesel Engine Replacement* – Older diesel engines are replaced with newer ones certified to reduce nitrogen oxide emissions.
- *Dust Control* – Farm roads and equipment areas are treated to control dust.
- *Grape Stake Disposal* – Grape stakes treated with chromium copper arsenate receive proper disposal.
- *Pest Management* – Precision pesticide spray technology, proven to reduce volatile organic compounds, is used.
- *Windbreaks & Shelterbelts* – Trees and shrubs intercept particulate matter and trap and absorb volatile organic compounds.

This basin traps sediments from the crop field. Crop rows run along the contour to intercept runoff and reduce erosion. Plastic mulch reduces weed competition and decreases the need for pesticides. Drip-irrigation conserves water.

Agricultural Waivers

On the Central Coast proactive workshops on water quality have been a joint undertaking by Agriculture, NRCS, and the University of California's Cooperative Extension Service (UCCE) since 2000. The Farm Water Quality Planning (FWQP) short course was designed to help farmers voluntarily get in front of water quality mandates.

The FWQP provides 15 hours of training over five days. NRCS instructs producers in areas such as soil erosion, sediment management, and riparian management; UCCE sessions focus on wise management of pests, nutrients and irrigation.

However, mid-way through this voluntary compliance approach, the historical waiver for agriculture (for runoff containing fertilizer, sediment or pesticides) was challenged. The Regional Water Quality Control Board Region 3 (RWQCB), replaced the standing waiver for agriculture with new requirements. The Board chose to use the FWQP course (or an equivalent) as the basis for the new procedures. After taking the course, farmers are required to develop a water quality plan, apply the plan, report progress, and participate in a water quality monitoring coalition. As a result over 1,500 farmers (60 percent) in the seven-county area are participating in the water quality effort.

In the Central Valley (RWQCB Region 5) Resource Conservation Districts took leadership in helping farmers comply with new RWQCB Region 5 monitoring requirements. The San Joaquin County RCD (SJCRCD) is overseeing a 4,700 member coalition of irrigated landowners operating 490,000 acres of irrigated cropland in three counties. For $1.50 an acre SJCRCD conducts water quality testing, compiles test results and conducts outreach meetings in conjunction with the county Agricultural Commissioner. SJCRCD and NRCS target identified problems with cost-share funding and technical assistance.

Thus while regulation ultimately was enacted, the early proactive education efforts of NRCS, partners, and growers set up a workable model that regulators agreed could work and that growers could live with.

Food Safety and Environmental Protection—

The fresh produce industry works hard to deliver a healthy, top-quality product. With the recent outbreak of E. coli 0157 the industry quickly responded with GAPS—good agricultural practices—designed to help growers spot and address problems and maintain their product's reputation with consumers.

Finding the best way for conservation and food safety to complement each other is a learning process for both the industry and the conservation communities and highlights the complexity and interdependence of agricultural and environmental issues in the Golden State. NRCS has been working cooperatively for years with local farmers on water quality and wildlife protection practices such as vegetated borders that filter sediment and absorb nutrients from rainfall runoff.

Now the challenge is to find the best way to fold these and other conservation practices in with the essential food safety guidelines that will protect consumers and maintain the economic viability of the industry. Towards this end, NRCS is working with the agricultural and research communities to determine the risks and benefits associated with specific conservation practices on the Central Coast.

Food safety challenges all involved in California agriculture to a collaboration of the highest order of importance using the best science available. NRCS intends to partner fully in this effort to move food safety—and conservation—forward.

Agronomist Aziz Rahman (right) reviews nutrient application rates with Madera County farm manager Silas Rossow using NRCS manure management planner software.

Milk Producers Get Help Making Manure Manageable

California is home to the largest number of dairies in the nation. Milk producers in the state are proud of the quality and volume of their dairy products. But they're increasingly challenged with the huge volume of manure produced in the large-scale operations common in California. The nutrient content of the manure, if not effectively utilized, can pollute the environment. Producers are facing additional regulatory requirements to assure that nutrients from waste do not gain access to ground and surface water. NRCS is working with dairy operators on science-based approaches to best manage their resources.

New technology is finding ways to turn the manure into resources like bio-fuel energy and plant-usable nutrients. Thus, the efficient storage, transportation, and end-use of such products have become quite important.

The trend in dairy manure management has shifted to what is known as Comprehensive Nutrient Management Planning (CNMP). In developing CNMPs, conservationists work with producers hand in hand to provide the means for adopting tactical and strategic nutrient manure management plans. The agency has also launched a confined animal operation initiative offering a dedicated pool of EQIP funding to help these producers with water quality issues. As part of the initiative, NRCS also created a statewide nutrient management team with engineers and agronomists to assist producers statewide. Hundreds of producers in California have received technical and/or financial assistance through the initiative.

NRCS provides hands-on training to producers and other partners in the use of innovative tools and techniques for manure and nutrient management. Anyone engaged in confined animal production is eligible for this initiative, including dairies, beef feedlots, and poultry and hog operations.

Healthy silage corn, a major component of dairy feed, benefits from manure nutrient application.

NRCS offers funds to share the cost of equipment like manure separators. They glean out the solid portion of the manure for use as compost, animal bedding or fertilizer. Other manure management tools funded by the NRCS initiative include manure storage ponds, transfer pipelines, manure treatment technology and nutrient management.

Trash rack, installed after fires to collect flood debris, required multiple agency permitting.

The Conservation Practices:

These 14 NRCS Standard Practices have been agreed to result in net environmental benefits and can be used on small restoration projects on agricultural lands and stream banks cooperating in the Permit Coordination Program. Agencies allow the practices with certain limitations on project scope and methods.

- Channel Stabilization
- Clearing and Snagging
- Critical Area Planting
- Diversion
- Filter Strip
- Grade Stabilization Structure
- Grassed Waterway
- Stream Obstruction Removal
- Pipeline
- Riparian Forest Buffer
- Sediment Basin
- Stream Bank Protection
- Structure for Water Control
- Underground Outlet

A Willingness to Permit Conservation

When landowners in one of California's most impaired watersheds show a willingness to control erosion and enhance aquatic and terrestrial habitat, government should do whatever it can to assist and not impede. That, at least, is the principle behind the Calleguas Creek Permit Coordination program, which seeks to make it easier for landowners to "do the right thing" on the landscape.

Calleguas Creek watershed lists 150 pollutants on 14 reaches that exceed statutory limits. Annually, the watershed delivers 412,000 tons of sediment to the main channel. However, landowners working to reverse this trend face a maze of permitting requirements from any or all of four different levels of government (County, Regional, State and Federal) tasked with protecting air, water and animals.

"It's enough to make the average person's head swim," says Brooks Engelhardt, NRCS Conservationist in Ventura County.

To reduce the complexity and headache for the landowner, NRCS is teaming up with the Ventura County RCD and a host of regulators to coordinate and accelerate the permitting process. "The idea is to obtain blanket permits (called programmatic permits) for certain practices (see sidebar) that we can all agree will benefit and not harm the watershed," says Dave Heilig, with NRCS in Riverside.

The RCD screens and accepts applicants who then plan and design conservation work with NRCS. The RCD serves as a go-between for the landowner and the agencies, assuring that work is done according to proper specifications and filing reports with the agencies. NRCS offers technical and financial help. "The obligations for the landowner are greatly reduced," says Engelhardt. "As a result more landowners are willing to embark on the process and more conservation gets done."

Trend Two

Technical and Financial Assistance

Increased Opportunities through Farm Bill Programs

> More than 90 percent of California farmers do not receive crop subsidy payments from the government.
>
> —Environmental Working Group

Conservation in general, and California conservation in specific, enjoyed increased focus in the 21st Century's first federal Farm Bill legislation. The 2002 Farm Bill increased overall conservation spending to $18 billion and California—which ranked 20th among the 50 states in conservation cost share funds as recently as 1998—now ranks second.

There is a vast need for this investment in California, the Nation's most productive and most diverse agricultural storehouse. Applications for conservation hardware and management continue to greatly outpace available funds. And each applicant voluntarily shoulders half of the cost of this investment in our future, doubling each federal dollar through a commitment by private landowners. Matching financial assistance in importance is the ongoing need for high-quality technical assistance to assure that dollars are invested on the landscape using knowledgeable, science-based planning and design.

The 2002 Farm Bill also introduced a new philosophical approach going beyond the piecemeal fix-it strategy of cost share programs to rewarding comprehensive stewardship. Embodied in the Conservation Security Program, this shift charts a new direction for farmland conservation on private land.

The 2007 Farm Bill, now underway, has the opportunity to build upon the trend of investing in conservation on private working lands and making full environmental partners of those who work the land.

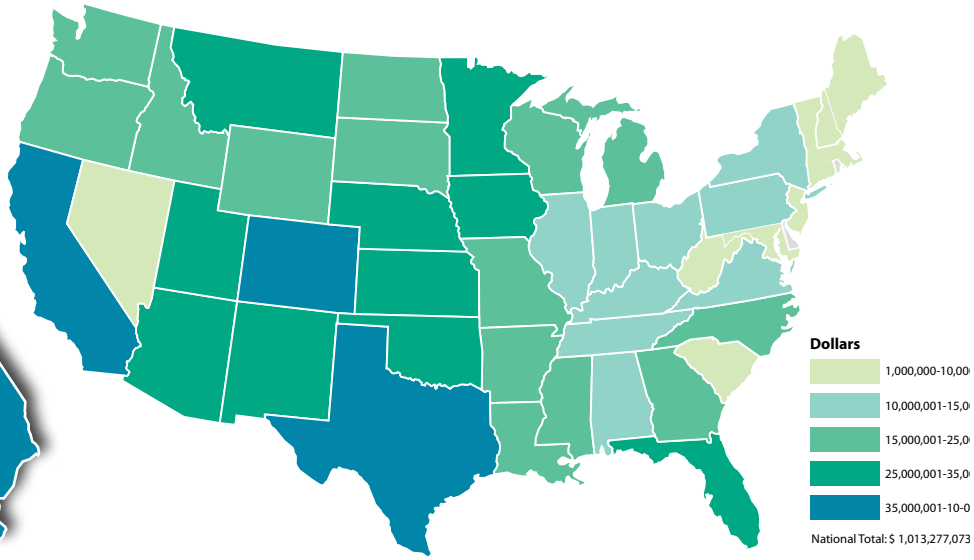
(Above) A durable plastic cap traps methane gas over a dairy manure lagoon. The methane fuels a generator which provides electricity in excess of this farm operation's needs.

EQIP Allocations to States

Fiscal Year 2006

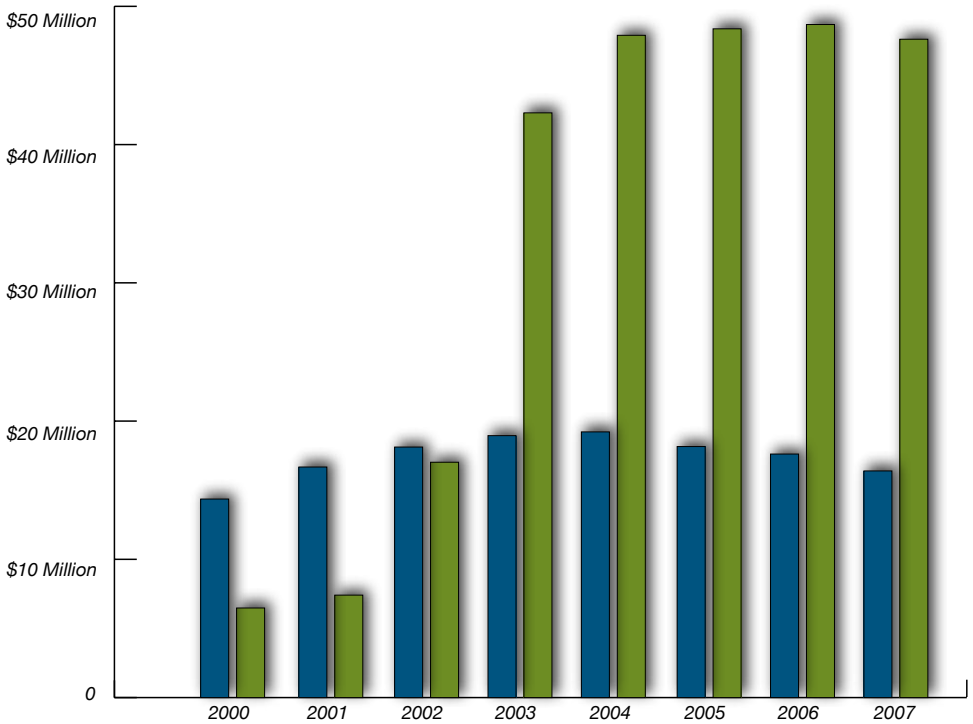
National Total Over $1 Billion

California ranked second in EQIP funding in 2006. By law, 60 percent of EQIP funds nationwide are reserved for assistance to livestock. The remaining 40 percent is divided between specialty crops, commodity crops, forestry management and wildlife habitat improvement.



Program Funding and Technical Assistance

2000-2007



Environmental Quality Incentives Program (EQIP) Financial Assistance for California
Annual Allocation 2000-2007

Conservation Technical Assistance (CTA)
California 2000-2007 (2007 estimated)

Conservation funding for California's private farm and ranchland increased markedly under the 2002 Farm Bill. The State's agricultural producers matched this investment with their own funds and this federal/private partnership resulted in gains in water quality, air quality, water conservation, soil conservation, forest improvement, rangeland management, wildlife habitat, on-farm energy generation and more.

While conservation cost share has been increasing in the 21st Century, funds for technical assistance have not been keeping pace. These are the funds with which NRCS provides professional conservation services to develop conservation farm and ranchland plans.

Slicing the Conservation Pie in California

Serving Specialty Crops, Commodity Crops, Livestock, Timber and Wildlife

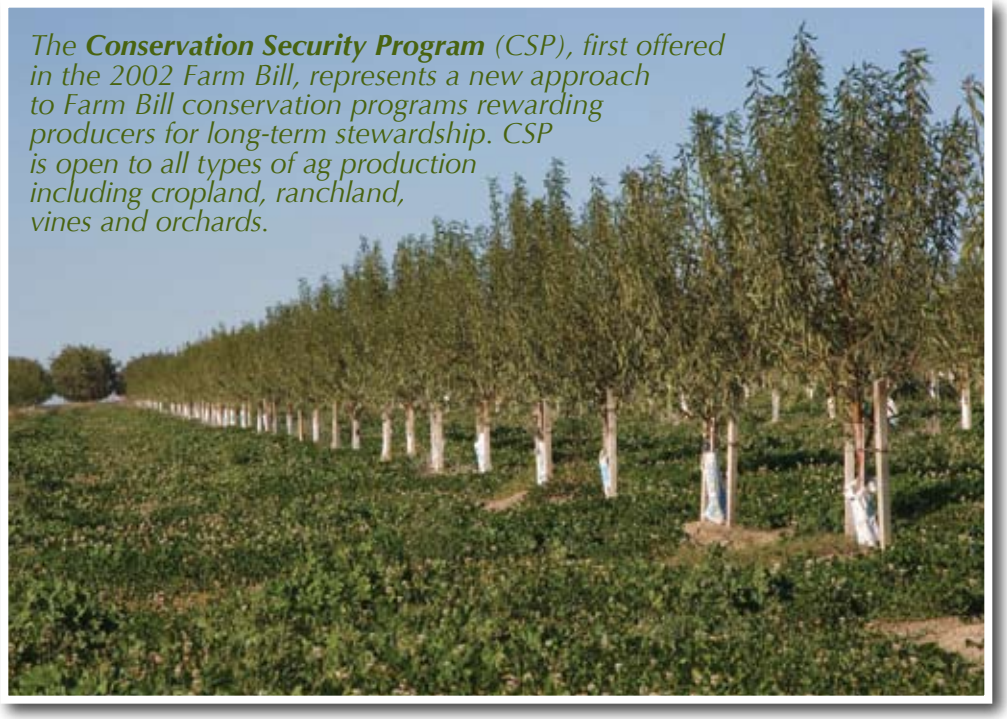
2002-2006*

Nearly $310 million

*While NRCS records are kept in conjunction with resources protected rather than crops grown, best estimates were made by each NRCS local office regarding assistance and compiled statewide.

Top 10 Crops in California

1. Milk and Cream
2. Grapes
3. Nursery Products
4. Almonds
5. Cattle and Calves
6. Lettuce
7. Strawberries
8. Oranges
9. Hay, Alfalfa
10. Flowers and Foliage



District Conservationist Rob Vlach reviews a conservation plan with olive producer Jerry Jackson.

Conservation Combats Sting of Olive Fruit Fly

McPhail trap in Jackson's orchard.

Tempting Target: Olive fruit fly larvae cause damage and feed exclusively in olive fruits by "stinging" the fruit surface, rendering fruits useless for canning. Larval feeding allows microorganisms to invade the fruit, causing rot and lower oil quality.

The olive fruit fly, first detected in California in 1998, is now found in ornamental and many commercial orchards throughout the State. This pest poses an especially serious threat to the California table olive and olive oil industries because even the hint of infestation can result in the rejection of an entire olive crop and devastating financial loss.

NRCS works closely with local Agricultural Commissioners on pest problems like the olive fruit fly to educate producers about possible solutions using Integrated Pest Management (IPM) practices and cost-share assistance available through the Environmental Quality Incentives Program (EQIP).

Jerry Jackson, a Glenn County olive producer, worked with NRCS to protect his orchard from pests while protecting water quality by using minimum amounts of pesticides.

Jackson signed up for EQIP which shares with him the cost of protecting his crops and reducing pesticide use by implementing IPM practices on 17 acres. IPM helps growers like Jackson to manage infestations of weeds, insects and disease while protecting water. Eligible IPM practices follow UC Extension guidelines. Non-pesticide techniques are employed and environmentally safe pesticides are used only in amounts and locations necessary.

Common IPM practices for olive orchards include McPhail traps and yellow sticky traps. These methods team up to bait the flies into traps and to disrupt their mating success, controlling the pests with minimum use of pesticides.

Nitrate Quick-Tests cost about 40-cents per analysis but can save growers $100s and $1000s in fertilizer costs. With Quick-Test Kits, farmers can assess field Nitrogen levels in about 5-minutes.

Strawberry Project Plumps Profits, Protects Water

In the Santa Maria River Watershed of the Central Coast, 72 percent of the population is Hispanic. Six thousand acres of small agricultural operations there grow strawberries, snap beans, tomatillos and squash. More than half the area is sharecropped, mostly by indigenous Mixtec from Mexico's Oaxaca, with little education and no formal agricultural training.

Without knowing it, many of these producers were applying excess fertilizer and didn't understand why their crops were not thriving. These growers were eligible for technical and financial assistance from NRCS, but with limited language and computer skills many didn't realize that help was available.

NRCS and the Cachuma Resource Conservation District of Santa Barbara County worked together on a tailored assistance package for the Mixtec farmers. Cost share assistance alone was not going to solve their problems until producers had a better understanding of nutrients, soils and plant needs.

Outreach to the farmers was comprehensive. Farmers received free Nitrate Quick-Tests and soil probes, soil sampling explanations, plant nutrient requirement information, invitations to Spanish Water Quality Planning Workshops, and coordinated assistance with UC Extension advisors and the Strawberry Commission.

Now farmers are saving thousands of dollars on fertilizers, reducing nutrients in groundwater, and enjoying healthier plants with bigger, better berries.

The farmers are building histories with USDA and looking into loans for equipment. The conservation partnership staff in Santa Barbara County look forward to having an increasing role in the lives of these hard-working producers. But the first step—and one that greatly improved their businesses and protected water resources—was a simple helping hand through technical assistance.

After taking 8-10 representative soil samples from the crop root zone, samples are mixed in a bucket and placed in a test tube to check field nitrate levels.

Trend Three

Building Upon Wildlife Stewardship

in Agricultural Operations

Spotting a hawk overhead, hearing the call of the quail or the chorus of tree frogs, or seeing a doe with her fawn are a few of the everyday delights of working the land. While some may see Agriculture and Wildlife as entrenched in separate camps, living along with wildlife has long been cited as a key quality of life enhancement by those who make their living from the land. Increasingly, farmers and ranchers are demonstrating ways they break down the false "either/or" choice of agricultural production vs. wildlife habitat.

"The market doesn't consider the value a farmer provides when he leaves a stream bank intact as habitat for native plants and wildlife; when he replaces an old almond harvester that still does the job, with a new one that produces less pollution; or when she puts water back in her rice field after harvest to provide a safe stopover for migrating snow geese."

Richard E. Rominger
Yolo County Farmer and Rancher
Former USDA Deputy Secretary

Technical assistance and NRCS programs can support this healthy agriculture/wildlife coexistence and help restore portions of the agricultural landscape to suitable wildlife habitat. For example, conservation easements can compensate farmers for voluntarily turning some of their least productive cropland into rich waterfowl habitat. Other producers are fallowing fields to wetlands as part of their crop rotation and harvesting weed and pest control benefits as a result.

Ranchers are managing livestock on California rangeland to play beneficial roles in the grasslands ecology: well-managed grazing lands maintain high quality habitat for plant communities such as those in vernal pool landscapes —as well as the animals that depend upon them.

NRCS District Conservationist Malia Hildebrandt positions a plant for use in a hedgerow on a dairy farm near Cressey, Calif.

Hedgerows: A Dairy Delight

Dairy producer Sally Magnuson is ecstatic about the new hedgerow on her farm north of Cressey, Calif.

She and her husband approached the NRCS about creating a wildlife corridor to connect an old river oxbow to the Merced River bordering their property. She was told that a hedgerow and filter strip would provide food, cover, and a safe travel lane for wildlife, as well as protecting soil from eroding into the river.

"I've always cared about animals and the environment," Magnuson says. "So much riparian land has been lost. I'd like to see every farmer leave space for vegetation and wildlife."

Using a grant from the Community Alliance of Family Farmers (CAFF), Magnuson created the hedgerow using perennial grasses and a variety of shrubs and forbs such as blue bush, coyote bush, coffee berry, currant, holly leaf cherry, toyon, and yarrow.

NRCS District Conservationist in Merced, Malia Hildebrandt, provided technical assistance to revise Magnuson's conservation plan to include the hedgerow and filter strip. Native grass seed for the filter strip was provided by the NRCS Plant Material Center in Lockeford, Calif.

Hildebrandt expects birds such as quail, meadowlarks, pheasants, and even ducks to utilize the corridor and make a home for themselves there.

About a year later, the hedgerow has grown to maturity.

Many of California's dairy farms provide valuable wildlife habitat.

California is the nation's leading state in dairy production.

Photo: U.S. Fish & Wildlife Service

Unlikely Partners Save Ranchlands

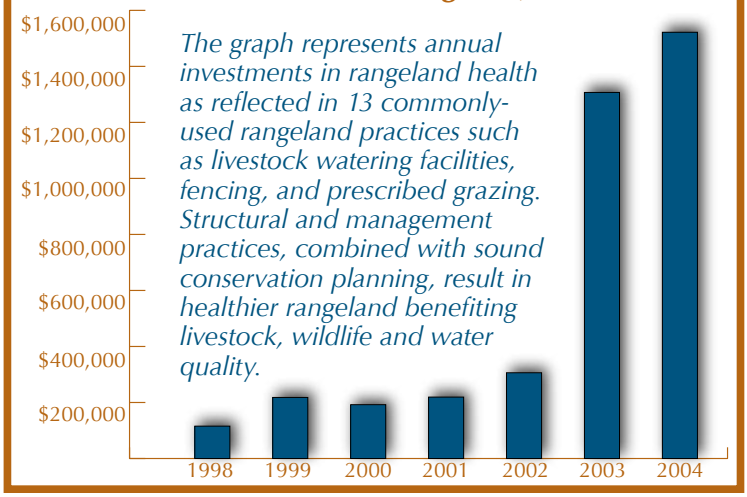
While they have had their differences in the past, there is one area where the ranching and environmental communities in California share a grave concern: as ranchlands rapidly yield to other land uses some of the State's best wildlife habitat is disappearing along with them.

The rate of conversion of family ranches to ranchette communities and other construction has accelerated to a degree that alarms both those concerned about habitat fragmentation and those concerned about the future of the ranching industry in California. From an agreement to slow down this trend and save ranchland *and* habitat has sprung a partnership called the California Rangeland Conservation Coalition.

This Coalition consists of many groups dedicated to preserving and improving habitat and instilling stewardship and stability in the ranching communities of the Great Central Valley and beyond. The partnership of conservation and environmentalist groups, producers, NRCS, US Fish and Wildlife Service and other agencies is removing barriers that have hampered conservation efforts in the past.

Now there is one voice. This voice gives advice to astounded legislators at both state and national levels. This joint effort to conserve both heritage and habitat in California could be the most powerful venue for conservation legislation to emerge in many years.

NRCS Rangeland Conservation Investment Through EQIP



The graph represents annual investments in rangeland health as reflected in 13 commonly-used rangeland practices such as livestock watering facilities, fencing, and prescribed grazing. Structural and management practices, combined with sound conservation planning, result in healthier rangeland benefiting livestock, wildlife and water quality.

For more information on the Coalition see

http://www.calcattlemen.org

Rancher Cuts Water Use and Helps Wildlife Habitat

Rancher Gerald Scanlan was determined to do something about the juniper trees taking over his 14,000 acre ranch on the California-Oregon border.

Once confined to rocky rims, junipers in the Klamath Basin Watershed have slowly moved down the hillsides and encroached on once-productive rangeland. Ever thirsty, the average juniper tree can drink 40 to 60 gallons of water per day, taking up precious groundwater needed by range plants and sucking streams dry.

Working with NRCS, Scanlan developed a ranch management plan establishing 12 units or fenced paddocks within the ranch. Scanlan used the Environmental Quality Incentives Program (EQIP) to remove junipers from about 1,000 acres—an expensive, time-consuming project that he says he couldn't do without help. By removing the juniper overstory he made room and water available for native grasses and sagebrush—a boon for both cattle and wildlife.

In 2005, Scanlan used the Wildlife Habitat Incentives Program (WHIP) to restore declining native sagebrush steppe plant communities and to develop permanent water sources for sage grouse and other wildlife.

As the projects progressed, Scanlan saw sagebrush resprouting and a tremendous increase in the density of native bunchgrasses. Early on, he was surprised to see returning sage grouse on the northern part of the ranch. Several springs and seeps have reappeared, and these areas were fenced to protect them for wildlife. Juniper stands were left in their historic natural habitat on ridgetops, providing wildlife movement corridors.

With EQIP cost-share assistance and funding from other state and federal agencies, Scanlan is removing thousands of acres of invasive juniper from his land to restore rangeland productivity and health.

Habitat improvement efforts are beginning to pay off. Scanlan's property provides winter range for hundreds of mule deer. There are also good numbers of pronghorn, on a seasonal basis. A herd of elk has arrived, and Scanlan has seen an improvement in the local deer herd numbers as well. Other increasing wildlife species include bobcat, coyote, cougar, California quail, blue grouse, waterfowl and a variety of non-game species.

Scanlan was surprised to see several sage grouse on the northern part of the ranch. The nearest sage grouse population was about 6 miles to the south on Clear Lake National Wildlife Refuge. Through the Wildlife Habitat Incentives Program Scanlan has been restoring declining native sagebrush habitat to support sage grouse and other wildlife.

Photo: U.S. Fish & Wildlife Service

Ponds, Permits and a Powerful Conservation Ethic

Why would ranchers in Alameda County bother to invest thousands of dollars to fix old, failing livestock ponds when there are modern watering alternatives available? According to NRCS District Conservationist, Terry Huff, it turns out that wildlife depend upon the ponds and can't operate the modern livestock alternatives. And so the ranchers are restoring the ponds out of what Huff calls, "A powerful conservation ethic and a love of the land."

Some of these wildlife—like California Red-legged frogs and Tiger salamanders—have threatened or endangered status. Ironically such status has created substantial red tape for those, like the ranchers, who want to help the wildlife. The Alameda County Permit Coordination Program is working to cut that tape and aid both the ranchers and the species.

To secure permits for the ponds ranchers agree to manage them as "wildlife friendly," which means grazing in specific ways, protecting the ponds, and keeping them full whenever possible. Huff says ranchers "are lining up out the door" to participate.

Huff attributes this success to a special ingredient that has been gradually blended into the mix: mutual respect. "When the agencies are assured that the landowners are willing to restore and manage the resources for the critters—and when the landowners are assured they are not going it alone, that they have someone they trust by their side—then the program is easy," he says.

Pond repair doesn't come cheap. The average cost is just over $30,000 and ranchers often repair multiple ponds. The NRCS pays 50% through EQIP. Other sources can then offer additional reimbursement and in Alameda the US Fish & Wildlife Service is paying 40%, leaving the rancher with 10% of the cost—about $3,000 per pond.

"We're not alone in this kind of effort," says Karen Sweet of the Alameda County Resource Conservation District. The California Rangeland Coalition has recognized this same Conservation Ethic and is bringing ranchers, environmentalists and regulators together on a much larger scale to restore ponds and to benefit habitat, water quality and the conservation goals of the ranchers.

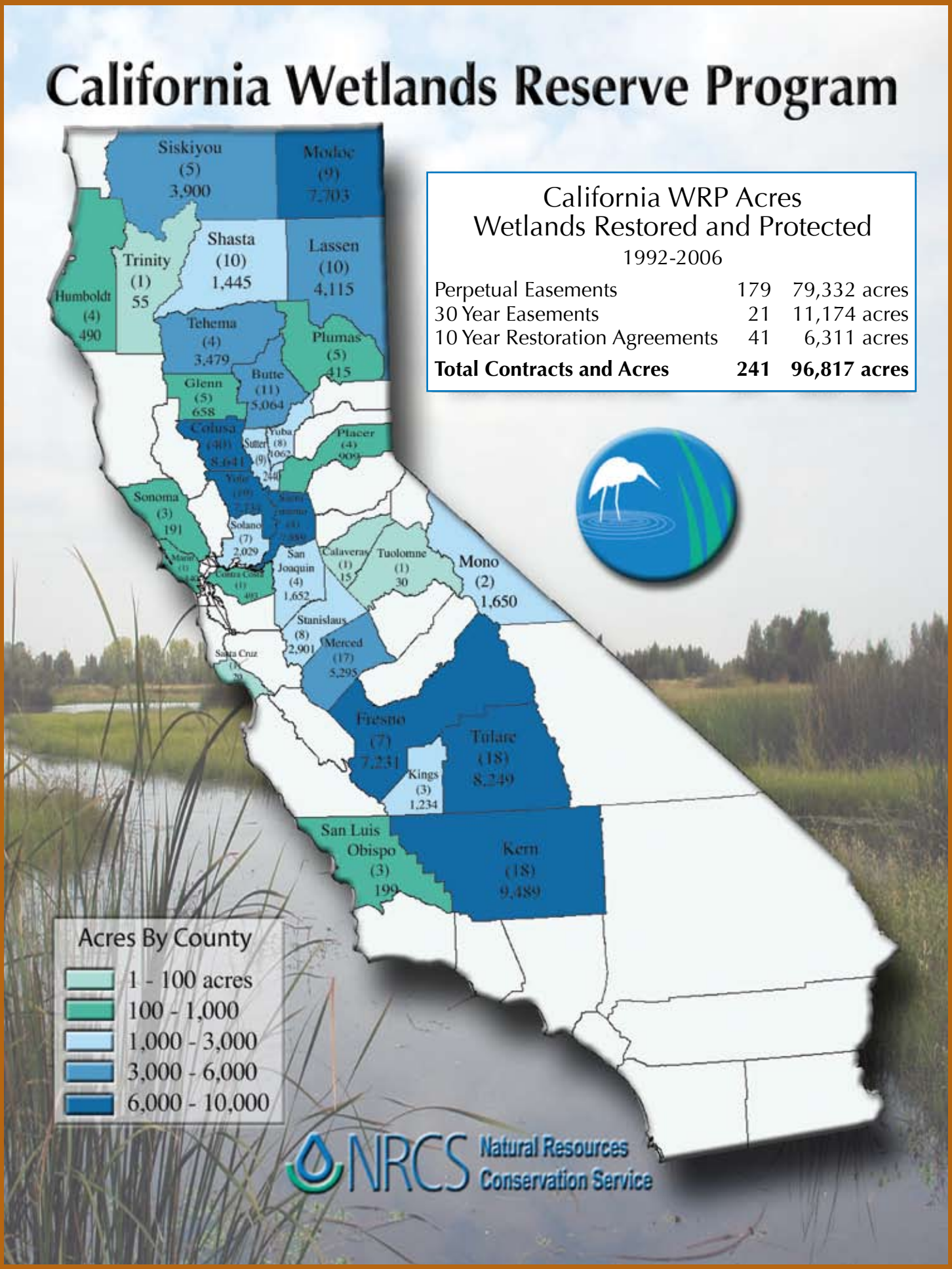
Threatened and endangered California Red-legged frogs (above) and Tiger salamanders (below) thrive in wildlife-friendly ponds restored by Alameda County ranchers.

Photo: U.S. Fish & Wildlife Service

To learn more about this story, visit the Alameda County Resource Conservation District website at

http://www.acrcd.org/

California Wetlands Reserve Program



California WRP Acres
Wetlands Restored and Protected
1992-2006

Perpetual Easements	179	79,332 acres
30 Year Easements	21	11,174 acres
10 Year Restoration Agreements	41	6,311 acres
Total Contracts and Acres	**241**	**96,817 acres**

A variety of shorebirds like black-necked stilts are returning to the Tulare Lake basin, once the largest body of fresh water in the western U.S.

Historic Wetlands Making a Comeback

The Tulare Lake was once the largest body of fresh water in the western U.S., harboring thousands of waterfowl and shorebirds. By the early 1900s, however, the lake had all but disappeared, its water held behind dams and the land converted to agricultural production.

The Wetlands Reserve Program (WRP) provides a voluntary option for landowners wishing to reverse this loss. Administered by NRCS, the program provides technical and financial assistance to private landowners interested in restoring, enhancing, and protecting wetland habitat. In 1995, NRCS began working on its first WRP project in Tulare County in an area that had been part of the historic Tulare Lake.

Slowly but surely wildlife are once again calling the Tulare Lake basin home. From this first 838-acre Tulare County WRP project has sprung a complex of more than 7,000 acres of contiguous ponds, levees, islands and other wetland and upland nesting habitats.

Across California the story repeats itself: landowners have voluntarily entered into 241 WRP easements representing nearly 100,000 acres. About three quarters of these easements, including those in Tulare, are permanent, ensuring an ongoing refuge for waterfowl and recreation.

Soil Conservationist Elizabeth Palmer studies newly restored wetland habitat near Alpaugh, California.

Wood ducks like these have been found at a WRP project in Kings County.

Jeff Dyer standing by the wetland that he created at JJ Farms near Zamora, California.

Agriculture's Contribution to Wetland Protection

With assistance through the Wetlands Reserve Program, Jeff Dyer successfully restored 34 acres of seasonal marsh through a 30-year WRP easement. The land, located east of Zamora, California, had previously been used to grow rice and tomatoes, but the heavy alkaline clay soil created poor farming conditions.

NRCS assisted Dyer with the excavation work necessary to restore the natural hydrology of the property and improve habitat for wetland-dependent wildlife. The work included construction of shallow water areas, levees and water-control structures. Dyer, in turn, maintains a variety of wetland plants and perennial vegetation that reduce soil erosion and sedimentation, improve water quality, and provide habitat for wildlife.

Today, the ponds are filled with ducks, geese, egrets, and other waterfowl. The fields are alive with game birds, deer, coyotes, rabbits, and many other animals. Next, Dyer is planning to put in some hedgerows around his sediment basin and maybe some trees to attract even more wildlife.

When he purchased it in 1989, Dyer's land looked much like other crop fields in the area.

Now, Dyer's ponds are filled with a multitude of ducks and other waterfowl year-round.

Dyer points to an EQIP-funded screw gate that allows tailwater to flow from his tomato fields into the pond.

Dyer's lush pond-side vegetation provides excellent nesting areas for ducks and geese. A wildlife enthusiast, Dyer works with the California Waterfowl Association through its Mallard Brood Pond Program in addition to his WRP efforts.

A diverse mosaic of WRP-restored wetland habitat provides food and cover for many types of wildlife, evidenced by the wide variety of animal tracks decorating the marshy ground.

Trend Four

Market-based Conservation Options

"Sustainability is like a three-legged stool, and all three legs must be present for it to succeed. They are economic sustainability, environmental sustainability, and social equity."

A.G. Kawamura
Secretary, California Dept. of Food and Agriculture

One of the most stable ways of building stewardship into agricultural operations is by finding ways of making it pay—and increasingly farmers are doing this.

While most agricultural producers have an innate appreciation for keeping their water clean and free of pesticide residues, those who are compensated for their extra effort –through a verifiable labeling process—have increased means for sustaining their wise management. Similarly, landowners report a great enjoyment from hosting wildlife on their land, but this enjoyment cannot help but be bolstered when those wildlife animals earn their keep just like their livestock counterparts. Bird watching, ecotours and managed hunting are a few ways wildlife can literally pay their way.

Environmental credits also pose an exciting prospect for both the environment and agriculture. Typically these would allow for businesses to balance pollutants or greenhouse gases they produce by purchasing credits from farmers or ranchers who can quantify the reduction of those pollutants on their land.

The new NRCS Strategic Plan employs market-based opportunities that support conservation on private lands as one of the three overarching strategies for the Agency to accomplish its conservation mission. Whether it's getting a premium price for a superior product, selling the public on the farm experience, finding ways to market energy or "waste from the farm," or selling environmental credits, the marketplace offers many options for building conservation and stability into the agricultural infrastructure of the 21st Century.

The producers who build diverse and economically stable operations are better positioned to continue their conservation work into the next generation. There are numerous projects in which NRCS partners with Resource Conservation and Development Councils to give a boost to innovative market-based possibilities.

Discarded plastic from strawberry crops

+

Abundant Juniper Trees

=

Biomass Fuel

Woodn't it be Nice?

We've all heard of turning lemons into lemonade. In heavily forested northern California, keeping communities fire safe can generate a lot of "waste" wood. Turning this by-product into energy could taste like cool lemonade on a hot day to rural agricultural communities. Resource Conservation and Development Councils in Modoc, Siskiyou and Trinity Counties—assisted by NRCS project coordinators—are pursuing feasibility studies and demonstration projects to do just that.

One project in Eastern Siskiyou County—the largest producer of live strawberry plants in the world—combines plastic generated in strawberry production with the wood of an overly abundant tree. For each acre of strawberry plants, approximately 450 pounds of polyethylene (PE), low density plastic is generated. With some 35,000 to 37,000 acres of strawberries this equates to 16 to 18 million pounds of PE per year.

Northern California and Southern Oregon is also home to approximately 2 million acres of western juniper, a species that has overtaken natural sagebrush/grass communities due to 150 years of fire suppression.

Ore-Cal RC&D Area Council is researching means of developing alternative biomass fuels using these surplus materials (PE and western juniper) as a means of replacing low-energy fuels (wood) and coal or petroleum-based fuels in nearby industrial applications.

Finding marketplace incentives for forestry management and the recycling of waste plastic is a good way of putting the squeeze on Siskiyou County's thousands of acres of "lemons."

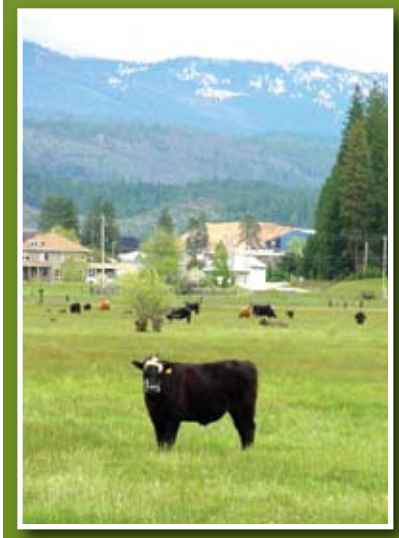
Ore-Cal RC&D Coordinator Jim Vancura holds a fuel cube made from discarded plastic and wood. These cubes burn clean with a Btu content equivalent to that of bituminous coal.

Coordinator Dan Macon enters ultrasound data while Dr. Allen Williams scans a steer.

Steaking a Claim in Local Sustainability

If consumers could be confident of getting local beef that is grass-fed, hormone free and has consistent quality, flavor, and tenderness would they pay extra for it? According to a study conducted by the High Sierra Resource Conservation & Development Council (HSRC&D) the answer was an enthusiastic, "Yes."

Thus was born High Sierra Beef (www.highsierrabeef.com), a business corporation that promises customers beef that is of the highest quality, locally produced, and 100% grass-fed and hormone free.



High Sierra Beef, Inc. steers were finished in mountain pastures near Quincy, California.

> "This kind of marketing system closes the loop," says Macon." The health of the environment and the economic success of the rancher are finally linked in the marketplace."

Animals sold to High Sierra Beef observe protocols that reflect respectful treatment of both animals and the environment. The company markets locally and customers know that the product is both top quality and protecting the surrounding watersheds and the open spaces they value.

"To have healthy animals, producers must maintain healthy grass which means controlled grazing that protects the grass and the soil it covers—and a good vegetative cover is the basis of a healthy rangeland ecosystem," says Dan Macon.

"I hate to say that happy cows make better steaks, but cows are made to be on grass," says Macon. " When animals are stress free, in an environment that is stress-free, it's better for everyone."

"This kind of marketing system closes the loop," says Macon. "The health of the environment and the economic success of the rancher are finally linked in the marketplace."

This colorful label clues consumers that the fruit, wine, wool or other farm product they're considering has come from San Luis Obispo County.

Reasons to Love Local

Yes, it's nice to buy local but where do you go to find what you need—and is it really worth the trouble?

The Central Coast Ag Network (CCAN) takes the mystery out of both questions, listing local producers (http://www.centralcoastgrown.org) under the categories: Fruits & Vegetables, Floral & Herb, Home Grown Meats & Dairy, Natural Wool & Fibers, and Winery & Vineyards. And as to the reason for buying local, CCAN says there's not just one reason, there's six:

1. You'll enjoy exceptional taste and freshness.
2. You'll support Local Farm Families and strengthen your local economy.
3. You'll support endangered family farms.
4. You'll help preserve open space.
5. You'll promote healthy choices.
6. You'll help protect the environment.

Sure, the food is fresher and it supports the local economy, but if you're wondering how that helps the environment, consider this: food in the United States, gets transported between 1,500 and 2,500 miles from farm to table, according to the Worldwatch Institute. And that transportation uses non-renewable fuel and contributes to air pollution and global warming.

"Our Locally Grown campaign helps our growers enhance their economic sustainability and strengthens their ties to the community. That in turn enables them to continue the voluntary conservation many of them are looking to do," says NRCS RC&D Coordinator Jeff Rodriguez.

NRCS and the Council were early boosters of the CCAN as an umbrella agency for assisting the locally grown campaign. They have assisted in grant writing and administration and continue to assist in refining marketing and distribution functions.

George Work leads an Ecology Tour on his family ranch.

Agricultural Tourism

The Work Family Guest Ranch is a Central Coast destination for city-weary refugees. As part of a farm stay guests can partake in trail rides, horse and cattle events, girls' horse clinics, camping, small group retreats, conservation/ecological tours and guided hunts.

The Work Ranch, one of 60+ sites listed on the Ag Adventures Farm Trails Map, is one of a growing number of farms, ranches and vineyards capitalizing on visitors' desires for relaxing and recreating in rural settings. Agritourism is a growing segment of the tourist industry that connects people with the land through activities like horseback riding, wrangling, sampling, produce picking, camping, hiking, hunting and fishing. The Work family has been involved in agritourism for 10 years and Ben Work says, "I farm for the wildlife as well as the cattle because wildlife pays in the tourism it brings to the ranch."

The Works leave a 35-foot wide perimeter of crops around fields as food for wildlife. Ground-level water troughs enable wildlife access. Boards inside troughs enable birds to reach the water.

The Central Coast Resource Conservation & Development Council (RC&D) assisted in producing the Ag Adventures map found at

www.agadventures.org

This wildlife-accessible water trough sustains birds and recreationally hunted wild boars on the Work Family Ranch in San Luis Obispo County.

In California's Central Coast, the Ag Adventures Farm Trails Map lists more than 60 sites available in the area for agritourism adventures. The Central Coast AgriTourism Council (CCAC) who produced the Ag Adventures map, has a web-site,

www.agadventures.org

The Central Coast Resource Conservation & Development Council (RC&D) assisted in the formation of the CCAC and in production of the map.

For the Works, agritourism and other rural adventure services provide a sustainable way to make market-based conservation work for them and the future of their Ranch.

Trend Five

Water Conservation

Top Resource Challenge of the 21st Century?

> *"Water is too precious a resource to put its future at risk. We rely on it in our daily life – for ourselves and for agriculture that produces our food supply..."*
>
> **Dianne Feinstein**
> **U.S. Senator from California,**
> **Op-ed, April 22, 2005**

Water availability could be California's most significant natural resource concern in the 21st Century. Many areas of the state have insufficient precipitation to meet demand in an average year and either import water from other watersheds or mine groundwater to meet annual demand. Water use conflicts have existed throughout the state's history, but have greatly intensified as population and development pressures and wildlife concerns have increased the demand for this precious but limited resource.

Efficient water management will be increasingly important as water demand increases and supply decreases. Improvements in water efficiency are generally more economical than developing new supply.

Agriculture is a significant user of water in the State, and in some areas a substantial amount of water is lost as it is distributed to farmers and crops through leaky pipes and unlined ditches. But new techniques and new technologies are changing the face of irrigation. Through technical and financial assistance, NRCS is helping farmers to identify and implement conservation practices that improve water efficiency and increase agricultural production in a cost effective way.

Klamath Basin rancher Bill Micke's conservation work with NRCS has paid off-- for both him and the fish of the Shasta River. His new system replacing leaky ditches with PVC pipe saves almost 1,600 gallons per minute, irrigates more evenly, and cuts down on erosion.

Ranchers Saves Water, Benefits Fish

A Klamath Basin rancher along the Shasta River in Siskiyou County wanted to save water by making his pasture irrigation system more efficient. With assistance through the Environmental Quality Incentives Program (EQIP), he installed surface and subsurface irrigation systems to replace his old flood irrigation that relied on a system of leaky ditches.

In addition to sharing the cost of the new system, NRCS provided technical assistance and an engineering design including the following: old steel pipe running from the pump to the fields was replaced with 420 feet of PVC pipe; a 12-inch flow meter was installed on the pump; leaky irrigation ditches were replaced with a subsurface system using 5,603 linear feet of low pressure PVC pipe and a surface system with nearly 1,368 feet of gated PVC pipe.

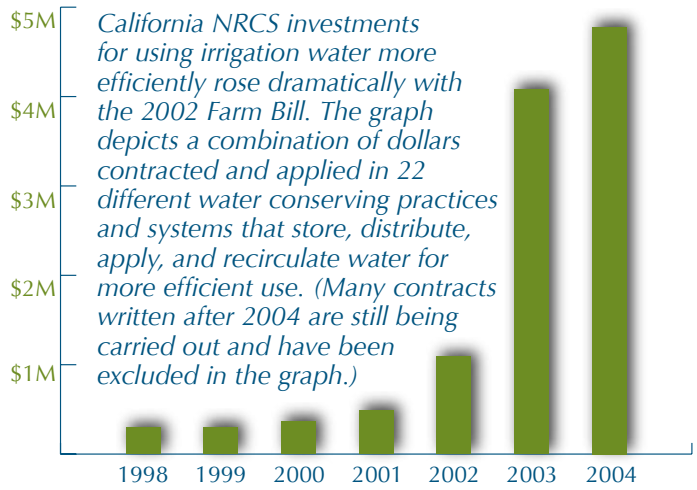
Results? The new systems save about 1,590 gallons per minute. Because water distribution is more even, the fields are greener than ever before. The rancher reports that his water use is cut in half, saving about 4 million gallons each year.

The pipelines have given the rancher greater control of his water use. He can now control the rate, amount, and timing of irrigation to minimize erosion and control water loss from runoff and deep percolation. By using less water from the Shasta River, more water is available to benefit fish populations. In concert with other efforts, such projects help safeguard the future of agriculture and wildlife in the Klamath Basin.

NRCS engineer Tom Benson (left) designed the surface and subsurface irrigation system to save water and provided technical assistance on the project. The improved irrigation system saves Bill Micke (right) time and money while leaving a lot more water in the Shasta River to benefit fish.

Rancher Bill Micke explains the benefits of his new irrigation system.

Water Conservation Investments Through EQIP



California NRCS investments for using irrigation water more efficiently rose dramatically with the 2002 Farm Bill. The graph depicts a combination of dollars contracted and applied in 22 different water conserving practices and systems that store, distribute, apply, and recirculate water for more efficient use. (Many contracts written after 2004 are still being carried out and have been excluded in the graph.)

Soil Surveys: Indispensable Tools in Water Management

Soil surveys are methodical, scientific looks at the soil properties of an area and typically involve digging thousands of holes to determine the soil composition and dynamics.

Local governments use soil survey information to plan things such as housing developments and roads. Farmers use the information to plan irrigation or drainage systems and to determine the best way to manage their land for unfamiliar crops as they adapt to changes in worldwide farming dynamics.

Soil surveys are invaluable in planning proper irrigation. How water moves (or doesn't move), is held (or isn't held) is greatly influenced by the texture, composition, slope and depth of the soil being watered. Soil surveys document these characteristics and more thus giving vital guidance for the judicious application of irrigation water. Irrigation water management, important in all areas, is especially critical in areas prone to subsidence, development of a high perched water table and subsequent increases in soil salinity.

NRCS has accelerated the completion of soil surveys throughout California.

The soil survey maps and reports are available on the Internet at:

http://websoilsurvey.nrcs.usda.gov

and the published information about soils at:

http://www.soils.usda.gov/survey/online_surveys/california/

Irrigation Savvy: Source of Past and Future Wise Water Use

Bakersfield Soil Conservationist Daniel Meyer tests the efficiency of a newly installed drip irrigation system by measuring the volume of water flowing from an emitter.

Drip irrigation conserves water in this San Joaquin County vineyard.

When water was more abundant—and technology was less so—any system that got water to a crop may have been deemed satisfactory. But with tightening water supplies, poor drainage and salty subsurface groundwater, California agriculture has been challenged to find better ways to irrigate.

The industry—aided by conservationists and engineers—has responded with better irrigation hardware matched by ever-improving management. Farmers now work to determine plant needs and water accordingly, controlling volume, timing, placement, and application rates to achieve top efficiencies.

Over the years NRCS has helped producers manage irrigation—with piping and ditches to cut down on water loss, land forming to allow water to flow evenly across the field, weirs and flow meters to more precisely measure water applied, and tensiometers and gypsum blocks to measure soil moisture.

One popular conservation system is drip irrigation, which—when combined with good management—places the right amount of water close to the plant roots. Such systems conserve water but can be costly. Thus, NRCS couples technical assistance with cost-share funds for drip irrigation and other water conserving systems.

Together with Resource Conservation Districts and other partners, NRCS also encourages growers to attend irrigation workshops to continually update their awareness of irrigation efficiency techniques.

The 21st Century promises population and climatic shifts that will intensify the challenges for everyone involved in wise water management in California.

Soil Conservationist Larry Flournoy (right) reviews Carey's conservation plan during the pipeline installation. Landowner Pete Carey is standing on the left.

Pipeline and Planning Save Rancher Plenty

Peter Carey, a Modoc County cattle rancher applied for EQIP in 2005 with the hope of increasing irrigation efficiency on 170 acres by installing two pivot sprinklers and an electric pump. His system of open ditches for flood irrigation was leaking water through the permeable soils, rising fuel prices were making his diesel pump more costly and it took a long time to get water to the fields.

NRCS evaluated the proposed project and then offered to do some conservation planning with Carey—to review his goals, his unique situation and determine action options. He agreed. What he discovered through local technical assistance surprised him: careful consideration of all of the possibilities led Carey to the conclusion that a low pressure pipeline flood system (with the electric pump) had much more to offer.

"The pipeline will improve water efficiency and water quality while having much lower operating and maintenance costs," said Soil Conservationist Larry Flournoy. "Energy costs alone would be about $160 per day to irrigate with a pivot sprinkler. Flood costs only $15," he said. Pest control is another benefit. Ground squirrels (a major problem) tear up the ground and ruin forage plants and crops. "Flood irrigation will keep the squirrels out of the fields, saving $6 to $10 per acre in control measures," Flournoy said.

"It used to take eight hours just to get water to my fields," Carey said. "And it took over three weeks, pumping day and night, to irrigate," he added. "Now, I'll be able to get water on the fields in 15 minutes, and irrigation will take just seven days. There will be savings on everything you can think of!"

By replacing his old irrigation ditch with buried mainline, Carey will eliminate ditch banks used by livestock, eliminate erosion through the ditch system to the Pit River, and increase forage production through improved irrigation efficiency on about 170 acres for cattle and wildlife.

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